Rejections under 35 U.S.C. § 101

The Examiner rejected claims 1, 3, 13, 21, and 29-68 under 35 U.S.C. § 101 as allegedly lacking utility. The Examiner asserted that the claimed invention lacked either a well-established utility or a specific substantial utility. Applicant respectfully traverses these rejections.

The Examiner referred to four different disclosed utilities, including "detecting the expression status of mRNAs", "detecting and diagnosing diseases and viral infections", "identifying cell types" and "cloning genes expressed in a tissue-specific manner". The Examiner asserted that the first use is essentially further research on the invention itself, the second is not substantial because there is no demonstrated correlation between expression and any disease or virus, the third and fourth are not specific because each cell type is expected to express a number of genes predominantly in that cell type, and any cell- or tissue-specific genes can be used to identify cell types or isolate tissue-specific genes, and the fourth is not a specific utility because a method of making a material that does not have a specific utility where the final product has no disclosed or well established utility. To the contrary, the claimed invention concerns polynucleotide sequences. As indicated, identification of these sequences provides useful probes and primers. Such probes and primers are reagents that can be used for a large variety of biological applications, including, for example, gene expression determinations, and gene mapping. Indeed, as described in the specification, the present sequences are particularly adapted to determine gene expression levels, as compared to ESTs obtained by random priming methods because there is only one sequence generated from each mRNA, and that sequence is obtained from the 3' end adjacent to the polyA tail. Contrary to the Examiner's assertion, the claimed sequences are not limited to further research on the invention (i.e., on the sequences), but instead provide reagents or tools of general application that can be applied in connection with assays, tests and studies on cell types, tissues characteristics, and disease states. Such reagent use is readily understood by one of ordinary skill in the art for unique sequences as presently claimed.

In addition, use of such probes and primers is substantial, as evidenced by the broad application of methods using such reagents. As indicated, the claimed molecules can be used, for example, in connection with distinguishing tissues, determinations of disease effects on gene expression, and many such applications not directed at the claimed molecules. Indeed, for many applications, the claimed molecules are properly considered as tools for determinations of

biological function, disease effects, and tissue, cell, or developmental differences. Thus, even to the extent that the claimed molecules are useful for research, the research is of broad applicability, not constituting merely further research on the invention itself. Indeed, exemplary such determinations are shown in the tables and the drawings. For example, Tables 1-219 provide illustrative results of expression level determinations for a number of different cell types.

In rejecting the described uses, the Examiner appears to require an unduly high level of utility and requires that the utility be directed in particular ways. However, the proper test of utility, is whether the claimed invention provides some beneficial use; it does not dictate what that use must be. For example, in *Juicy Whip, Inc. v. Orange Bang, Inc.*, 185 F.3d 1364, 1366 (Fed. Cir. 1999), the Federal Circuit reiterated that "The threshold of utility is not high: An invention is 'useful' under section 101 if it is capable of providing some identifiable benefit." Likewise in *Brooktree Corp. v. Advanced Micro Devices*, 977 F.2d 1555, 1571 (Fed. Cir. 1992), the Court stated that "To violate §101, the claimed device must be totally incapable of achieving a useful result." Still further, in a similar manner, in *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 762 (Fed. Cir. 1984), the Federal Circuit stated that "the fact that an invention has only limited utility and is only operable in certain applications is not grounds for finding lack of utility."

Assertion that the claimed invention is only useful for research is simply not appropriate grounds for rejection. In this regard, use of the claimed molecules as research reagents does not differ significantly from the use of research devices or equipment or other reagents. For example, many electrophoresis devices, mass spectrometry equipment, and similar laboratory equipment have, or initially had, only research applications. Nonetheless, it is difficult to imagine that the Examiner would assert that such research equipment lacked utility in view of the significance of the research that can thereby be performed. Thus, even if the present molecules were only useful as research reagents, the utility requirement is amply satisfied. In this respect, *Brenner v. Manson*, 383 U.S. 519 (1966) is not to the contrary, as the present molecules have broad application in relation to tissue, cell type, developmental and disease studies, distinct from the compounds at issue in *Manson*.

Thus, the Federal Circuit has in a number of recent cases, in applying *Brenner v. Manson*, 383 U.S. 519 (1966), determined that the utility requirement does not require particular types of utility. Thus, for example, the assertion by the Examiner that correlation with particular diseases

is required is not supported by the controlling case law. Thus, the present specification satisfies the requirements of § 101.

In view of the substantial utility of the claimed molecules, Applicant requests that the Examiner reconsider and withdraw the rejections for lack of utility.

Rejections under 35 U.S.C. §112

Written Description

The Examiner asserted that the claimed invention lacked sufficient written description, such that one skilled in the art would not understand that the inventors were in possession of the claimed invention. To the contrary, the ability of the inventors to obtain the unique 3' sequences from the mRNAs, itself demonstrates that the inventors were in possession of the mRNAs, and of fragments of those mRNSs. Because each of the unique 3' sequences corresponds to a single mRNA, the sequences as specified in the present claims provide sufficient structural information to uniquely and specifically identify the corresponding mRNA, cDNA, and even genomic sequences. That is all that is required, it is not necessary to specify each and every nucleotide because of the additional information linking each sequence to a specific mRNA/cDNA.

Thus, Applicant has satisfied the Written Description requirement, and respectfully requests that the Examiner reconsider and withdraw the rejection.

Enablement

The Examiner also asserted that the present invention was not enabled, because utility was lacking, and therefore one skilled in the art would not know how to use the invention. As this rejection is based directly on the alleged lack of utility, which was discussed above, Applicant does not further address the matter here. The discussion above demonstrating utility appropriately overcomes this rejection also.

The Examiner also asserted that the specification is enabling only for polynucleotides limited to the specific sequences shown in the specification, alleging that isolating full-length cDNAs or genomic clones would require further experimentation on the invention itself.

As Applicant had previously pointed out and as indicated in the specification (and as not disputed by the Examiner), one of ordinary skill in the art can readily obtain additional sequences by conventional probing and cloning methods. Thus, providing such sequences is merely routine, and does not involve undue experimentation. The absence of the need for "undue experimentation" has long been the standard for enablement expressed by the Federal Circuit, not the lack of "further experimentation." One of ordinary skill in the art would have no doubt that longer sequences corresponding the respective genes would be provided by the routine methods. Thus, the present invention satisfies the long-established standard for enablement.

In view of the preceding discussion concerning enablement and the enablement standard consistently expressed by the Federal Circuit, Applicant respectfully requests that the Examiner reconsider and withdraw the enablement rejections.

In accordance with the remarks above, Applicant submits that the claims are now in condition for allowance, and respectfully requests a notice to that effect.

Applicant respectfully requests a three-month extension of time to allow timely response up to and including November 9, 2000. Attached hereto is a check in the amount of $890.00 for the fee for that extension. No additional fee is believed due in connection with this communication. However, if any additional fee is due, kindly charge our Deposit Account No. 50-1273 for the appropriate amount.

Respectfully submitted,
BROBECK, PHLEGER & HARRISON LLP

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